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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 0504

Application Number: 09/941,370

Filing Date: August 28, 2001

Appellant(s): FANG ET AL.

Robert A. Voigt, Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/25/03 and 1/16/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-2 and 10 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) ClaimsAppealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

| | | |
|-----------|-----------------|---------|
| 6,417,051 | TAKEBUCHI | 7-2002 |
| 4,780,424 | HOLLER ET AL. | 10-1988 |
| 5,674,788 | WRISTERS ET AL. | 10-1997 |
| 5,175,120 | LEE | 12-1992 |

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Cappelletti et al., U.S. Patent 5,637,520 in view of Takebuchi, U.S. Patent 6,417,051 or Holler et al., U.S. Patent 4,780,424 or Wristers et al., U.S. Patent 5,674,788.

Cappelletti et al. shows the invention substantially as claimed including a method comprising the steps of: providing a portion 35' of a dual gate oxide in a periphery area of the memory cell; simultaneously providing a dual gate oxide 61 in a core area of the memory device and completing the dual gate oxide 35" in the periphery area (see Figures 10-12 and column 4-lines 20-65).

Cappelletti et al. fails to expressly disclose providing a nitridation process in both the core area and periphery area of the memory device to strengthen the interface.

Takebuchi discloses providing a nitridation process in both the core area and periphery area of the memory device (see fig. 4D-4F and col. 12-lines 4-40).

Additionally, Holler et al. discloses that nitridation processes enhance the quality of gate oxides (see col. 5-lines 12-15), and Wristers et al. discloses nitridation improves the properties of oxides (see col. 3-lines 40-65). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Cappelletti et al. so as to include an additional nitridation process after forming the oxides to strengthen the interface as suggested by Takebuchi, Holler, or Wristers et al. because the nitridation allows for a gate film of longer endurance.

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cappelletti et al., U.S. Patent 5,637,520 in view of Takebuchi, U.S. Patent 6,417,051 or Holler et al., U.S. Patent 4,780,424 or Wristers et al., U.S. Patent 5,674,788 as applied to claim 1 above, and further in view of Lee, U.S. Patent 5,175,120.

Cappelletti et al. and Nakata are applied as above but fail to expressly disclose depositing a layer of polysilicon in a core and peripheral area; depositing a layer of ONO layer over the polysilicon; and removing the layer of ONO and poly from the peripheral area.

Lee discloses a conventional process for simultaneous memory and peripheral formation including forming a polysilicon layer 24 and a ONO layer 26 and removing

both of these layers from the peripheral region 10 (see Figures 2A-2B and column 3-lines 4-55) and a subsequent process to form a second polysilicon layer in the memory and peripheral areas. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process so as to include memory and peripheral gate formation process of Lee in the reference of Cappelletti et al. modified by Nakata because this is shown to be conventional and a suitable fabrication process for the simultaneous formation of memory and peripheral circuits.

(11) Response to Argument

Appellant's arguments filed 1/16/04 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine Takebuchi with the primary reference of Cappelletti et al. is because films with longer endurance are produced, the motivation to combine Holler et al. with the primary reference of Cappelletti et al. is because nitridation processes enhance the quality of gate oxides (see col. 5-lines 12-15 of Holler et al.), and the combination to combine

Wristers et al. with the primary reference of Cappelletti et al. is because nitridation improves the properties of oxides (see col. 3-lines 40-65 of Wristers).

Concerning appellant's arguments of the Takebuchi, Holler et al., and Wristers et al. references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Also, note that the claims are rejected under 35 USC 103 and therefore it is not a requirement that all of the limitations are shown in a single reference.

Regarding appellant's statement that the examiner must not rely on his own subjective opinion for combining Cappelletti with other secondary references, clearly this is not the case particularly when the motivation to combine Cappelletti with the other references comes from the secondary references themselves. Regarding Takebuchi, note that the motivation to combine Takebuchi with the primary reference of Cappelletti need not come from the reference itself but the knowledge generally available to one of ordinary skill in the art. Furthermore, the Takebuchi reference itself at col. 1-line 35 to col. 2-line 18 discloses advantages of having a nitrogen containing oxide film both as a gate and tunnel insulator. Note also that the advantages of having a film of longer endurance would be clearly apparent to one of ordinary skill in the art because this would allow for a device which performs at a high level longer than other devices.

Appellant also argues that combining the secondary references with the primary reference would change the principle of operation of the primary reference and therefore the combinations are improper. However, appellant appears to be confusing the principle of operation for the references being physically combinable. Regarding the references being physically combinable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Concerning the rejection of claims 2 and 10, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Furthermore, it has long been established that the fact that a reference shows a suitability for an intended purpose is a proper motivation to combine references (see MPEP 2144.07).

For the above reasons, it is believed that the rejections should be sustained.

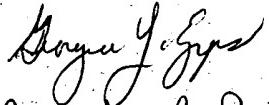
Respectfully submitted,

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